

Remarks

Reconsideration and reexamination of this application, as amended, are respectfully requested. Claims 12-14 and 16-18 are pending in this application upon entry of this Amendment. The Applicant has amended claims 12 and 16. No claims have been added.

Status of the Office Action mailed on March 18, 2003

The Office Action Summary of the Office Action mailed on March 18, 2003, indicated that the Office Action is "FINAL." The Office Action itself was labeled as a "Non-Final Office Action" on page 2. It appears that the Office Action Summary is incorrect as the status of this Office Action should be non-final based on the new rejection described below which is being made after an RCE was filed on February 18, 2003.

Claim Rejections - 35 U.S.C. § 103

In the Office Action mailed on March 18, 2003, the Examiner rejected claims 12-14 and 16-18 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 6,018,778 issued to Stolowitz ("Stolowitz"), and further in view of White, How Computers Work ("White"). The Applicant believes that the claimed invention is patentable over any combination of Stolowitz and White and has amended independent claims 12 and 16 to more clearly define thereover.

The Applicant has amended independent claims 12 and 16 to recite that the data block currently being read is determined to be good or bad "based on the reading of the data block currently being read." Support for this amendment is found on page 3, lines 16-20; page 5, lines 5-7 and 12-14; page 6, lines 4-7; page 10, lines 19-24; page 11, lines 15-17; and page 12, lines 10-13 of the specification.

1. The Claimed Invention

The claimed invention, as recited in amended independent claims 12 and 16, is a method and an associated system for providing data blocks from a magnetic tape to a host. The method and system are for use in a "single magnetic tape RAIT" environment. Such a single magnetic tape RAIT environment includes a magnetic tape having data blocks and a parity block serially arranged on a single track of the magnetic tape with the parity block following the data blocks. The parity block is based on the data blocks as conventionally known.

The method includes reading the data blocks sequentially from the track of the magnetic tape and determining if the data block currently being read is good or bad based on the reading of the data block currently being read. The data block currently being read is provided to the host if the currently being read data block does not follow a bad data block. If one of the data blocks is bad, the method includes storing the good data blocks following the bad data block in sequential order.

Parity of the good data blocks is accumulated as the data blocks are being read. The parity block is then read from the track of the magnetic tape after all of the data blocks have been read. If one of the data blocks is bad, the bad data block is then reconstructed from the accumulated parity of the data blocks and the parity block in order to form a reconstructed good data block. The reconstructed good data block is then provided to the host and then the stored good data blocks are provided to the host in sequential order.

2. Stolowitz and White

The Examiner posited that Stolowitz discloses the claimed invention with the exception of explicitly disclosing a magnetic tape having data blocks and a parity block in which the data blocks and the parity block are serially arranged on the magnetic tape with the parity block following the data blocks and being based on the data blocks. The Examiner posited that White discloses the format of a tape having parallel tracks with each track being

divided into segments of blocks of bytes. Specifically, each track being divided into 512 or 1,024 bytes and each segment typically containing 32 blocks. The Examiner posited that eight blocks in a segment contain error-correction codes and, as a result, the tracks comprise both data and parity.

3. The Claimed Invention Compared to Stolowitz and White

The claimed invention generally differs from any combination of Stolowitz and IBM in that the claimed invention is directed to an implementation of RAIT on a track of a single magnetic tape. As such, the data blocks and the parity block are serially arranged on a track of the magnetic tape with the parity block following the data blocks. The data blocks are read sequentially from the track of the magnetic tape and then the parity block is read from the magnetic tape after all of the data blocks have been read.

As such, the claimed invention uses a parity block which is redundancy information calculated from the data blocks. The principle of the parity block is as follows: take "N" data blocks and from them compute the parity block so that there are now "N+1" blocks. If any one of the "N+1" blocks is unreadable, the unreadable block can be reconstructed from the remaining "N" blocks, regardless of which block is unreadable. The calculation for determining the parity block and reconstructing an unreadable block is typically the logical "exclusive OR" or "XOR" operation as recited in dependent claims 13-14 and 17-18.

In contrast, White teaches the use of an error-correction code (ECC) in some of the blocks of a segment in a track. An ECC is generally implemented by splitting data of data blocks at the bit level and then spread over a number of blocks (such as eight of the thirty-blocks in a segment as disclosed by White). As such, some of the blocks contain both data and the ECC. Typically, a Hamming code is used to calculate the ECC from the data bits.

Accordingly, White does not teach or suggest data blocks and a parity block serially arranged on a track of the magnetic tape with the parity block following the data

blocks. In contrast, White teaches blocks serially arranged on a magnetic tape track with some of the blocks being data blocks and some of the blocks being data and ECC blocks. As such, if a block containing both data and the ECC were unreadable, then it is not clear as to how White would be able to construct the data in this unreadable block. In contrast, the claimed invention enables any unreadable block to be constructed from all of the remaining blocks. Therefore, modifying Stolowitz with White would not result in the claimed invention.

In view of the foregoing amendments and remarks, the Applicant believes that amended independent claims 12 and 16 are patentable over Stolowitz and White. Claims 13-14 and 17-18 depend from one independent claims 12 and 16. Therefore, the Applicant requests reconsideration and withdrawal of the rejection to the claims under 35 U.S.C. § 103(a).

CONCLUSION

In summary, claims 12-14 and 16-18, as amended, meet the substantive requirements for patentability. The case is in appropriate condition for allowance. Accordingly, such action is respectfully requested. If a telephone or video conference would expedite allowance or resolve any further questions, such a conference is invited at the convenience of the Examiner.

Respectfully submitted,

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